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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/800,953	03/15/2004	Greg Galazin	HOL01 P453	9955
277 7590 04/09/2007 PRICE HENEVELD COOPER DEWITT & LITTON, LLP 695 KENMOOR, S.E. P O BOX 2567 GRAND RAPIDS, MI 49501			EXAMINER MCCREARY, LEONARD	
			ART UNIT	PAPER NUMBER
			3616	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	04/09/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No. 10/800,953	Applicant(s) GALAZIN ET AL.	
	Examiner Leonard J. McCreary, Jr.	Art Unit 3616	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 13 February 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-3, 5-8, 10-20 and 22-31 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 5, 6, 10, 11 and 22-31 is/are allowed.
- 6) ☒ Claim(s) 1-3, 7, 8 and 12-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 15 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 13 February 2007 has been entered.

Specification

2. Objections to the specification are withdrawn.

Claim Rejections - 35 USC § 112

3. Rejections of claims 10-11 and 22-31 under 35 USC 112, first paragraph are withdrawn.

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claim 12 stands rejected under 35 U.S.C. 102(b) as being anticipated by US 2002/0130480 to VanDenberg. VanDenberg discloses a trailing arm suspension comprising:

a. The second end of each trailing arm further comprising a lip extending radially outward from the aperture and at least one engagement surface 47, 49 extending radially outward from the lip and adapted to abut a bushing-removal tool (claim 12.)

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1-3 stand rejected under 35 U.S.C. 103(a) as being unpatentable over US 2002/0130480 to VanDenberg in view of US 3,904,300 to Hetmann. VanDenberg

Art Unit: 3616

discloses a variable compliance pivot assembly and suspension system comprising the following:

b. A suspension system for suspending a vehicle frame above a plurality of ground-engaging wheels, comprising: a wheel-carrying axle 4 comprising a first end and a second end; a pair of frame bracket assemblies 14 each comprising a resiliently-bushed pivotable connection 34 defining a pivot axis, the frame bracket assemblies operably coupled to opposite sides of the vehicle frame, the resiliently-bushed pivotable connection comprising a substantially cylindrically shaped bushing 40; and a pair of trailing arms 20 each comprising a first end 58 operably coupled to the first end and the second end of the axle, respectively, and a second end 32 comprising an aperture 38 that receives the bushing of one of the frame bracket assemblies therein, wherein the aperture of the second end of each trailing arm is noncircular (para 0036, lines 8-9), thereby causing a nonsymmetrical compression of the bushing about the pivot axis (para 0039, lines 1-7) (claim 1.)

c. The aperture of the second end of each trailing arm is symmetrical with respect to a substantially horizontal plane (Fig. 8) [0045] (claim 2.)

d. The aperture is oriented so as to apply a greater compression in a substantially horizontal direction than in a substantially vertical direction (para 0039, lines 1-16) (claim 3.)

5. VanDenberg does not teach an oval-shaped aperture. Hetman discloses an elastic joint and teaches:

Art Unit: 3616

e. A resiliently-bushed pivotal connection having a cylindrical bushing and a oval-shaped aperture (col 3, lin 54-56), thereby causing a nonsymmetrical compression of the bushing about the pivot axis (col 4, lin 3-9) (claim 1.)

6. Re claim 1, it would have been obvious to one of ordinary skill in the art at the time the apparatus was made to modify the trailing arm suspension of VanDenberg to include oval-shaped apertures as taught by Hetman so as to provide different resilience along different operational axes (col 4, lin 3-23.)

7. Claims 7-8 stand rejected under 35 U.S.C. 103(a) as being unpatentable over US 2002/0130480 to VanDenberg in view of US 2004/0056446 to Dudding et al. and further in view of US 7,048,288 to Chan et al. The disclosure of VanDenberg is discussed above and further discloses:

f. A suspension system for suspending a vehicle frame above a plurality of ground-engaging wheels, comprising: a wheel-carrying axle 4 comprising a first end and a second end; a pair of frame bracket assemblies 14 each comprising a frame bracket and a resiliently-bushed pivotable connection 34, the frame bracket assemblies operably coupled to opposite sides of the vehicle frame; and a pair of trailing arms 20 each comprising a first end operably coupled to the first end 28 and the second end 32 of the axle, respectively, and a second end comprising an aperture 38 that receives the resiliently-bushed pivotable connection 40 of one of the frame bracket assemblies therein (Fig. 2) (claim 7.)

g. The second end of each trailing arm is cylindrically shaped (claim 8.)

Art Unit: 3616

8. VanDenberg discloses neither a pair of I-beam shaped trailing arms nor a tapered top plate. Dudding discloses a trailing arm suspension and teaches:

h. A pair of I-beam shaped trailing arms each comprising a top place, a bottom plate, and a web extending between the top and bottom plates (fig. 1) (claim 7.)

i. The second end of each trailing arm is cylindrically shaped (claim 8.)

9. Chan discloses a vehicle suspension trailing beam and teaches:

j. The top plate includes a first thickness substantially proximate the first end and a second thickness substantially proximate the second end that is less than the first thickness (fig. 1) (claim 7.)

10. Re claim 7, it would have been obvious to one of ordinary skill in the art at the time the apparatus was made to modify the trailing arm suspension of VanDenberg to include I-beam shaped trailing arms as taught by Dudding so as to increase the rigidity/weight ratio of the beam, the purpose for which I-beams are typically selected. It would have been obvious to one of ordinary skill in the art at the time the apparatus was made to modify the trailing arm suspension of VanDenberg to include a tapered top plate as taught by Chan so as to provide a seat for an air spring (col 5, lin 7-9.)

11. Claim 13 stands rejected under 35 U.S.C. 103(a) as being unpatentable over US 2002/0130480 to VanDenberg as applied to claim 12 above. The disclosure of VanDenberg is discussed above. Although VanDenberg meets all of the structural limitations of the claims, VanDenberg does not specifically teach casting the trailing

Art Unit: 3616

arms. Re claim 13, it would have been obvious to one of ordinary skill in the art at the time of invention to manufacture the trailing arms according to old and well-known metal forming processes such as casting, welding, forging, hydroforming, magnaforming, etc. Further, the examiner notes that the method of forming is not germane to the issue of patentability of the device itself.

12. Claims 14 and 15 stand rejected under 35 U.S.C. 103(a) as being unpatentable over US 2002/0130480 to VanDenberg in view of US 5,836,698 to Richardson. The disclosure of VanDenberg is discussed above. VanDenberg does not teach a tool engagement surface with apertures. Richardson discloses an apparatus for removal and installation of strut bearings and teaches the following:

k. At least one engagement surface includes a first pair of engagement surfaces, and a second pair of engagement surfaces, wherein the first pairs and second pairs of engagement surfaces extend radially outward (Fig. 2.) (claim 14.)

l. Each of the engagement surfaces includes an aperture extending therethrough (Fig. 2) (claim 15.)

13. It would have been obvious to one of ordinary skill in the art at the time of invention to modify the axle suspension system of VanDenberg to include the bushing removal tool engagement surfaces as taught by Richardson so as to increase serviceability of the bushings (column 1, lines 19-23.)

Art Unit: 3616

14. Claims 16-18 and 20 stand rejected under 35 U.S.C. 103(a) as being unpatentable over 5,366,237 to Dilling et al. Dilling discloses a trailing arm axle suspension comprising the following:

- m. A suspension system for suspending a vehicle frame above a plurality of ground-engaging wheels, comprising: a wheel-carrying axle 7 comprising a first end and a second end; a pair of frame bracket assemblies 41, 55 operably coupled to opposite sides of the vehicle frame; and a pair of shock absorbers 57 each comprising a first end operably coupled to the vehicle frame (Fig. 8) and a second end; and a pair of trailing arms 42, 69 each comprising a first end operably coupled to the first end and the second end of the axle, respectively, a second end operably coupled to one of the frame bracket assemblies, and an outwardly extending shock support tang (Fig. 12) operably coupled to one of the shock absorbers (claim 16.)
- n. The shock support tang is located proximate the first end of the trailing arm (claim 17.)
- o. A pair of air springs 69 each comprising a flexible boot; and a pair of trailing arms 69 each comprising a first end operably coupled to the first end and the second end of the axle 7, respectively, a second end operably coupled to one of the frame bracket assemblies 55, and a top surface comprising a first portion and a second portion (Fig. 12), wherein the second portion is adapted to support one of the air springs thereon, and wherein the second portion extends above the first portion (claim 18.)

15. Dilling does not specifically teach casting the trailing arms. Re claims 16 and 20 it would have been obvious to one of ordinary skill in the art at the time of invention to manufacture the trailing arms according to old and well-known metal forming processes such as casting, welding, forging, hydroforming, magnaforming, etc. Further, the examiner notes that the method of forming is not germane to the issue of patentability of the device itself. Re claim 18, the functional recitation "thereby substantially reducing an amount of contact between the trailing arm and the boot of the air spring when the air spring is in a deflated condition" does not serve to distinguish over the structure of Dilling. In order to be given patentable weight, a functional recitation must be expressed as a "means" for performing the specified function, as set forth in 35USC 112, 6th paragraph, and must be supported by recitation in the claim of sufficient structure to warrant the presence of the functional language. *In re Fuller*, 1929 C.D. 172; 388 O.G. 279.

16. Claim 19 stands rejected under 35 U.S.C. 103(a) as being unpatentable over US 5,366,237 to Dilling et al. in view of US 2004/0056446 to Dudding et al. The disclosure of Dilling is discussed above. Dilling does not teach the trailing arm with an I-beam-shaped cross section. Dudding discloses an air spring and air spring mounting assembly and teaches a cast trailing arm with an irregular I-beam-shaped cross section. It would have been obvious to one of ordinary skill in the art at the time of invention to modify Dilling's axle suspension system comprising a trailing arm having a top flange with first and second portions to cast the trailing arm with an irregular I-beam-shaped

cross section as taught by Dudding so as to maintain a simple yet rigid beam especially conducive to the process of casting.

Allowable Subject Matter

17. Claims 5-6, 10-11, and 22-31 are allowed.

Response to Arguments

18. Applicant's arguments filed 13 February 2007 have been fully considered but they are not persuasive.

19. Re claim 12, applicant argues VanDenberg does not disclose a lip extending radially outward from an aperture and at least one engagement surface extending radially outward from the lip. Examiner disagrees and notes that VanDenberg figure 3 clearly discloses a lip 44, 45 extending radially outward from an aperture and at least one engagement surface 47, 49 extending radially outward from the lip, the engaging surface being capable abutting a bushing removal tool, and further notes that it has been held that the recitation that an element is "adapted to" perform a function is not a positive limitation, but only requires the ability to so perform; it does not constitute a limitation in any patentable sense. *In re Hutchison*, 69 USPQ 138. Applicant argues that a bushing removal tool could not be used on the lip of VanDenberg. Examiner disagrees and notes that it is common and well-known that several types of

bushing/bearing removal tools simply seat on the surface of a lip, perimeter, or edge of the bushing/bearing housing so as to use the surface as a force application point to pull or push the bushing/bearing from the aperture. Further, the claim simply recites the lip is "adapted to" abut a tool, and fails to offer structure defining over VanDenberg used in conjunction with a common bushing/bearing removal tool.

20. Re claims 1-3, Applicant argues that Hetmann is non-analogous art. Examiner disagrees and notes that the apparatus instantly disclosed uses a cylindrical bushing installed in an oval-shaped aperture thereby producing a nonsymmetrical compression of the bushing, which results in reduced compliance in the direction of compression. VanDenberg teaches the advantages of employing a nonsymmetrically-compressed cylindrical bushing in a second end of a trailing arm for a vehicle suspension, but discloses a different structure for applying the nonsymmetrical compression to the cylindrical bushing. Hetman teaches a structure for nonsymmetrically compressing a cylindrical bushing comprising an oval-shaped aperture. Although the bushing of Hetman is used in a steering linkage rather than a suspension linkage, Hetman is relied upon only for an alternate structure for nonsymmetrically compressing a cylindrical bushing; the primary reference VanDenberg discloses the context and advantages for using such a structure, and thus it would be obvious to one of ordinary skill in the art to exchange one nonsymmetrically compressed cylindrical bushing for one of the same having an alternate structure but identical functionality.

21. Re claims 7-8, Applicant argues that Chan does not disclose an arm having a top plate that varies in thickness along the length thereof. Examiner disagrees and draws

Art Unit: 3616

attention to Chan figure 3, which clearly shows the trailing arm having a top plate with a first thickness at the second end 35 and a second thickness at the first end 41. Further, Applicant offers instant figure 5 as evidence re the definition of "thickness," however figure 5 does not, in fact, illustrate this feature; the top plate 72 as viewed from the side appears to be of generally constant thickness from the bushing aperture to the shock tang.

22. Re claim 16, applicant argues Dilling fails to disclose a shock tang as being formed as an integral part of the frame bracket. Examiner disagrees noting the shock tang of Dilling is clearly attached to the frame bracket, further noting that it has been held that the term "integral" is sufficiently broad to embrace constructions united by such means as fastening and welding. *In re Hotte*, 177 USPQ 326, 328 (CCPA1973.)

23. Re claim 18, applicant argues the two-surface configuration of Dilling does not provide any additional clearance that would substantially reduce an amount of contact between a trailing arm and a boot of an airbag. Examiner notes that the structure of Dilling encompasses the structure of the present application as broadly recited, and further notes that it has been held that the recitation "thereby" is functional rather than structural and therefore does not define any structure and accordingly cannot serve to distinguish over the prior art. *In re Mason*, 114 USPQ 127, 44 CCPA 937 (1957.)

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Leonard J. McCreary, Jr. whose telephone number is 571-272-8766. The examiner can normally be reached on 0700-1700 M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Paul Dickson can be reached on 571-272-6669. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

L. McCreary, Jr. 4/2/07
Leonard J. McCreary, Jr.
Examiner
Art Unit 3616

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